

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN THE MATTER OF:

ONODERA ET AL

ORDER NO.:4463

FOR: COMMUNICATION SYSTEM

**PRELIMINARY AMENDMENT**

Assistant Commissioner of Patents  
& Trademarks  
Washington, DC 20231

SIR:

This is a Preliminary Amendment for the above-identified application which is divisional application of U.S. patent application Serial No. 09/033,016 filed March 2, 1998.

**IN THE SPECIFICATION**

Please substitute new page 1 attached hereto for page 1 on file. New page 1 identifies this application as a divisional application of the parent filed application now allowed.

**IN THE CLAIMS**

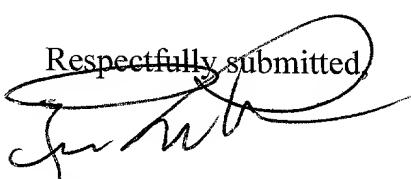
Please cancel claims 1-29 and substitute the attached new claims 30-41.

**REMARKS**

The new set of claims are based on the claims which have been withdrawn from the parent application, U.S. Serial No. 09/033,016. In addition, in the new set of claims attached hereto, a wired LAN is recited as a network and a circuit controller is recited as a communication control device.

Early and favorable action on this application is respectfully requested.

Respectfully submitted



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## **COMMUNICATION SYSTEM**

### **BACKGROUND OF THE INVENTION**

This application is a divisional application of Serial No. 09/033,016 filed March 2, 1998.

#### Field of the invention:

The present invention relates to a communication system providing voice and data communication services through LAN (Local Area Network) system and relates to a cordless communication system of a private branch exchange (PBX) system wherein plural radio base stations are present in a limited area.

#### Description of the Related Art:

Generally, a personal computer which is equipped with a voice processor board and a network I/F (Interface) card is provided for managing a voice communication or a data communication of a PBX (Private Branch Exchange) system within a limited area of one firm location, that is, the voice processor is connected to a PBX switchboard through a telephone line and the voice communication is performed through the PBX switchboard. A wired network system such as LAN (Local Area Network) system is connected to the network I/F card and the data communication is practiced among personal computers connected to the network system. However, in this communication system, a large-scale wiring construction is necessary for the system to connect all personal computers which handle telephones provided for each persons to a telephone network. Furthermore, a massive PBX

**WHAT IS CLAIMED IS:**

31. A communication system comprising:

at least one radio base station having voice data processing function, which can communicate with plural mobile radio terminal equipment and said radio base station being connected to a network, wherein said radio base station has call control function and protocol conversion function of converting a protocol between a network protocol and a mobile radio terminal equipment protocol; and

a communication control device having call control function, which controls communications between said radio base station and other terminal equipment having voice data processing function connected to said network, wherein said communication control device is connected to said radio base station through said network and said communication control device directs said radio base station to carry out call control, and wherein said communication control device includes communication control means for managing a communication path between said radio base station and said other terminal equipment, and wherein said radio base station and said other terminal equipment transmits and receives a voice data respectively between them through said network when a communication path between said radio base station and said other terminal equipment is established, and wherein said voice data transmitted between said radio base station and said other terminal equipment does not pass through said communication control device.

30. A communication system comprising:

at least one radio base station having voice data processing function, which can communicate with plural mobile radio terminal equipment and said radio base station being connected to a network, wherein said radio base station has call control function and protocol conversion function of converting a protocol between a network protocol and a mobile radio terminal equipment protocol;

at least one terminal equipment having voice data processing function, which is connected to said radio base station through said network and said terminal equipment, has an interface for a telephone network and protocol conversion function of converting a protocol between a network protocol and a telephone network protocol; and

a communication control device having call control function, which controls communications between said radio base station and said terminal equipment, wherein said communication control device is connected to said radio base station and said terminal equipment through said network, and wherein said communication control device includes communication control means for managing a communication path between said radio base station and said terminal equipment, and wherein said radio base station and said terminal equipment transmits and receives a voice data respectively between them through said network when a communication path between said radio base station and said terminal equipment is established, and wherein said voice data transmitted between said radio base station and said terminal equipment does not pass through said communication control device.

32. A communication system comprising:

at least one radio base station having voice data processing function, which can communicate with plural mobile radio terminal equipment and said radio base station is connected to a network, wherein said radio base station includes first call control means for controlling calls and protocol conversion function of converting a protocol between a network protocol and a mobile radio terminal equipment protocol;

at least one analog circuit terminal equipment, which is connected to said radio base station through said network and said analog circuit terminal equipment, has an interface for an analog telephone network and protocol conversion function of converting a protocol between the network protocol and an analog telephone network protocol, wherein said analog circuit terminal equipment includes second call control means for controlling calls;

a communication control device having call control function, which is connected to said radio base station and said analog circuit terminal equipment through said network, wherein said communication control device includes communication control means for managing a communication path between said radio base station and said analog circuit terminal equipment, and wherein said radio base station and said analog circuit terminal equipment transmits and receives a voice data respectively between them through said network when a communication path between said radio base station and said analog circuit terminal equipment is established, and wherein said voice data transmitted between said radio base station and said analog circuit terminal equipment does not pass through said communication control device; and

voice data processor means for communicating between said radio base station and said analog circuit terminal equipment.

33. A communication system comprising:

at least one radio base station having voice data processing function, which can communicate with plural mobile radio terminal equipment and said radio base station, is connected to a network, wherein said radio base station includes first call control means for controlling calls and protocol function of converting a protocol between the network protocol and a mobile radio terminal equipment protocol;

at least one ISDN terminal equipment, which is connected to said radio base station through said network and said ISDN terminal equipment has an interface for an ISDN network, wherein said ISDN terminal equipment includes second call control means for controlling calls and protocol conversion function of converting a protocol between the network protocol and the ISDN network protocol and the ISDN protocol;

a communication control device having call control function, which is connected to said radio base station and said ISDN terminal equipment through said network, wherein said communication control device includes communication control

means for managing a communication path between said radio base station and said ISDN terminal equipment, and wherein said radio base station and said ISDN terminal equipment transmits and receives a voice data respectively between them through said network when a communication path between said radio base station and said ISDN terminal equipment is established, and wherein said voice data transmitted between said radio base station and said ISDN terminal equipment does not pass through said communication control device; and

voice data processor means for communicating between said radio base station and said ISDN terminal equipment.

34. A communication system comprising:

at least one radio base station having voice data processing function, which can communicate with plural mobile radio terminal equipment and said radio base station is connected to a network, wherein said radio base station includes first call control means for controlling calls and protocol conversion function of converting a protocol between the network protocol and a mobile radio terminal equipment protocol;

at least one analog circuit terminal equipment, which is connected to said radio base station through said network and said analog circuit terminal equipment, has an interface for an analog telephone network and protocol conversion function of converting a protocol between a network protocol and an analog telephone network protocol, wherein said analog circuit terminal equipment includes second call control means for controlling calls;

at least one ISDN terminal equipment which is connected to said radio base station and said analog circuit terminal equipment through said network, and said ISDN terminal equipment has an interface for an ISDN network, wherein said ISDN terminal equipment includes third call control means for controlling calls and protocol conversion function of converting a protocol between the network protocol and the ISDN protocol;

a communication control device having call control function, which is connected to said radio base station and said analog circuit terminal equipment and said ISDN terminal equipment through said network, wherein said communication control device includes communication control means for managing a communication path among said radio base station and said analog circuit terminal equipment and said ISDN terminal equipment, and wherein said radio base station and said analog circuit terminal equipment and said ISDN terminal equipment transmits and receives a voice data respectively among them through said network when a communication path among said radio base station and said analog circuit terminal equipment and said ISDN terminal equipment is established, and wherein said voice data transmitted among said radio base station and said analog circuit terminal equipment and said ISDN terminal equipment does not pass through said communication control device; and

voice data processor means for communicating among said radio base station and said analog circuit terminal equipment and said ISDN terminal equipment.

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35. A communication system in accordance with claim 30, wherein data communication protocol conversion means for transmitting and receiving computer data other than voice data are provided for said radio base station and said other terminal equipment.
36. A communication system in accordance with claim 31, wherein data communication protocol conversion means for transmitting and receiving computer data other than voice data are provided for said radio base station and said terminal equipment.
37. A communication system in accordance with claim 32, wherein data communication protocol conversion means for transmitting and receiving computer data other than voice data are provided for said radio base station and said analog circuit terminal equipment.
38. A communication system in accordance with claim 33, wherein data communication protocol conversion means for transmitting and receiving computer data other than voice data are provided for said radio base station and said ISDN terminal equipment.
39. A communication system in accordance with claim 34, wherein data communication protocol conversion means for transmitting and receiving computer data other than voice data are provided for said radio base station and said analog circuit terminal and said ISDN terminal equipment.
40. A communication system in accordance with claim 30, wherein said other terminal equipment is another radio base station having voice data processing function which can communicate with plural mobile radio terminal equipment other than said plural mobile radio terminal equipment communicating with said radio base station.
41. A communication system in accordance with claim 40, wherein data communication protocol conversion means for transmitting and receiving computer data other than voice data are provided for said radio base station and said other terminal equipment.